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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,516	12/04/2003	Renato Conta	000280.00036	7168

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EXAMINER	
STEPHENS, JUANITA DIONNE	
ART UNIT	**PAPER NUMBER**
2853	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/726,516	CONTA ET AL.	
	Examiner	Art Unit	
	Juanita D. Stephens	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Application filed 12/04/03*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 December 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 10/344,412.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 6 is objected to because of the following informalities:

In claim 6, line 1 replace "(45") with –(45')--.

Appropriate correction is required.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "layer of gold" recited in claim 14 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will

be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6 and 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Yagi et al. (US 6,143,190).

Yagi et al. discloses a thermal inkjet printhead (Fig. 17) having grooves formed by dry etching, wet etching and electrochemical etching, comprising: 1) nozzles (emission holes 302), 2) chambers (located beneath the emission holes), 3) resistors (emission energy generators 301), 4) a groove (ink supply hole 303), made in a substrate (304), suitable for fluidly ducting ink to said chamber (col 18, ln 60-col 19, ln 30), wherein said groove comprises a first portion (creation of window 14 of Fig. 1C) produces by a dry etching (col 11, lns 13-20), and a second portion produced by means of an electrochemical etching (col 11, 21-42), wherein said substrate is made of silicon (col 18, lns 60-61), 5) said nozzles (303) and said resistors (301) are disposed in columns parallel to one and the same geometric references (extending in the lengthwise direction of the substrate, as shown on Fig. 17), 6) said first portion (creation of window 14 of Fig. 1C) of said groove has a substantially rectangular shape having a greater

side parallel to said geometric reference (col 11, lns 22-25; col 12, lns 20-25; and as shown on Figs. 1C and 17), 7) said second portion of said groove has a substantially rectangular shape having a greater side parallel to said geometric reference (col 12, lns 20-25; and as shown on Figs. 6B and 19D), 8) said first portion of said groove also comprises a wet etching having a substantially rectangular shape and a greater side parallel to a crystallographic axis of said silicon which constitutes said substrate, and that said crystallographic axis cannot be parallel to said geometric reference (col 11, lns 30-35, and as shown in Fig. 1D), 9) an anti-cavitation layer (221) of electrically conducting material (col 23, lns 63-67), and 10) said anti-cavitation layer of electrically conducting material forms a single equipotential surface through said head (as shown on Figs. 22F, 22G and 23), wherein said anti-cavitation layer is made of tantalum (col 23, ln 63).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 7-8, 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi et al. (US 6,143,190) in view of Bhaskar et al. (US 5,635,968).

Yagi et al. discloses a thermal inkjet printhead (Fig. 17) having grooves formed by dry etching, wet etching and electrochemical etching, comprising: 1) nozzles (emission holes 302), 2) chambers (located beneath the emission holes), 3) resistors

(emission energy generators 301), 4) a groove (ink supply hole 303), made in a substrate (304), suitable for fluidly ducting ink to said chamber (col 18, ln 60-col 19, ln 30), wherein said groove comprises a first portion (creation of window 14 of Fig. 1C) produces by a dry etching (col 11, lns 13-20), and a second portion produced by means of an electrochemical etching (col 11, 21-42), wherein said substrate is made of silicon (col 18, lns 60-61), 5) said nozzles (303) and said resistors (301) are disposed in columns parallel to one and the same geometric references (extending in the lengthwise direction of the substrate, as shown on Fig. 17), 6) said first portion (creation of window 14 of Fig. 1C) of said groove has a substantially rectangular shape having a greater side parallel to said geometric reference (col 11, lns 22-25; col 12, lns 20-25; and as shown on Figs. 1C and 17), 7) said second portion of said groove has a substantially rectangular shape having a greater side parallel to said geometric reference (col 12, lns 20-25; and as shown on Figs. 6B and 19D), 8) said first portion of said groove also comprises a wet etching having a substantially rectangular shape and a greater side parallel to a crystallographic axis of said silicon which constitutes said substrate, and that said crystallographic axis cannot be parallel to said geometric reference (col 11, lns 30-35, and as shown in Fig. 1D), 9) an anti-cavitation layer (221) of electrically conducting material (col 23, lns 63-67), and 10) said anti-cavitation layer of electrically conducting material forms a single equipotential surface through said head (as shown on Figs. 22F, 22G and 23), wherein said anti-cavitation layer is made of tantalum (col 23, ln 63). Yagi et al. further at least teaches said anti-cavitation layer of tantalum is between 200 and 1000 A. (col 23, ln 63).

Yagi et al. does not disclose 1) said printhead comprises an N-well layer (recited in claim 7, 2) said printhead comprises a P+ layer (recited in claim 8), 3) said anti-cavitation layer of tantalum is between 0.4 and 0.6 um thick, and 4) said printhead comprises a first metal or a second metal and that said first metal or said second forms one or more electric contacts with said anti-cavitation layer (recited in claim 15). Bhaskar et al. at least teaches said printhead comprises an N-well layer (col 10, lns 44-49, as shown on Fig. 9), said printhead comprises a P+ layer (col10, lns 27-30), said anti-cavitation layer of tantalum is between 0.4 and 0.6 um thick (5500 angstrom converts to 0.550000000000000 micrometer μm)(col 11, lns 60-64), and said printhead comprises a first metal or a second metal and that said first metal or said second forms one or more electric contacts with said anti-cavitation layer (col 12, lns 29-37). It would have been obvious at the time the invention was made to a person having ordinary skill in the inkjet art to modify Yagi et al. by providing the N-well and P+ layer, the ant-cavitation layer of tantalum between 0.4 and 0.6 um thick, and the printhead having first metal or a second metal and that said first metal or said second forms one or more electric contacts with said anti-cavitation layer as taught to be old by Bhaskar et al. for the purpose of reducing the number of interconnections per driver, increasing the speed of the printhead, and reducing crosstalk.

7. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi et al. (US 6,143,190) in view of Garcia (US 5,317,346)

Yagi et al. are discussed above. Yagi et al. further does not disclose said anti-cavitation layer covered by a layer of gold (recited in claim 13) and wherein the layer of

gold is between 100 and 200 A (recited in claim 14). Garcia at least teaches said anti-cavitation layer covered by a layer of gold (col 4, lns 5-10) having some particular thickness. It would have been obvious at the time the invention was made to a person having ordinary skill in the inkjet art to modify Yagi et al. by providing the anti-cavitation layer covered by a layer of gold as taught to be old by Garcia for the purpose of providing a printhead structure having increased strength, allows for smaller thin film substrates and provides for reduced manufacturing costs. It would have been further obvious at the time the invention was made to a person having ordinary skill in the ink jet art to modify Yagi et al. in view of Garcia by providing the specific thickness of the gold layer as 100 and 200 A, since applicant has not disclosed that having the specific thickness solves any stated problem or is for any particular purpose and it appears that the printhead would perform equally well with the gold layer of any thickness.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juanita D. Stephens whose telephone number is (571) 272-2153. The examiner can normally be reached on Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Juanita D. Stephens
Primary Examiner
Art Unit 2853

October 31, 2004